

**A NEW SUBSPECIES OF *GREVILLEA ACANTHIFOLIA*
(PROTEACEAE: GREVILLEOIDEAE) FROM SOUTH-EASTERN
NEW SOUTH WALES**

by

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ABSTRACT

Makinson, R. O. & Albrecht, D. E. A new subspecies of *Grevillea acanthifolia* A. Cunn. (Proteaceae: Grevilleoideae) from south-eastern New South Wales. *Muelleria* 7(1): 89–93 (1989). — A new subspecies of *Grevillea acanthifolia* spp. *paludosa* R. Makinson & D. Albrecht, from the Nalbaugh Plateau is described and illustrated, with notes on distribution and habitat, and a key to subspecies of *G. acanthifolia*.

INTRODUCTION

Material collected by P. Gilmour and D. Albrecht on the Nalbaugh Plateau in February 1987 was found to be closely related to *G. acanthifolia*, ssp. *acanthifolia* and to *G. acanthifolia* ssp. *stenomera* (F. Muell. ex Benth.) McGillivray, which occur respectively in the Central and Northern Tablelands of New South Wales, and shares features with each that make subspecific rank appropriate.

Terminology and presentation follows that used by D. J. McGillivray in his revision of *Grevillea* (in prep.).

TAXONOMY

***Grevillea acanthifolia* A. Cunn. ssp. *paludosa* R. Makinson et D. Albrecht, ssp. nov.**

a *Grevillea acanthifolia* A. Cunn. subsp. *acanthifolia* lobis foliorum angustioribus et inflorescentiis brevioribus, a *G. acanthifolia* ssp. *stenomera* (F. Muell. ex Benth.) McGillivray ramulis subsericeis et statura excelsiore, ab ambobus subspeciebus pilis adpressis plerumque praesentibus infra laminarum foliorum affinis costae et donatoribus pollinis conicis validus et erectis plus differt. (Fig. 1).

TYPUS: c. 2.5 km WNW. of Mt Wog Wog trig., Nalbaugh National Park, 37° 05' 15" S., 149° 24' E., rare (12 plants seen) in peaty drainage line. Shrub c. 3 m high and 5 m diameter. Associated spp. include *Boronia deanei*, *Gahnia radula*, *Leptospermum lanigerum*, *Tetrarrhena acuminata*, *Schoenus maschalinus*, *Gleichenia dicarpa*, *Bauera rubioides*, *Acacia costiniana*, 22.ii.1987, D.E. Albrecht 3078 & P. Gilmour (bud, fl., fr.). (**HOLOTYPE:** MEL 1556925; **ISOTYPE:** NSW).

Prickly spreading shrub to 3 m high and 5 m wide, with ascending to decumbent branches and entangled foliage. *Branchlets* angular in cross-section, longitudinally ridged, subsericeous (sometimes the ridges almost glabrous). *Leaves* subsessile (appearing petiolate — laminal tissue below basal lobe-pair very narrow), deeply pinnatipartite, (35–)40–60 mm long, 40–70 mm wide (when pressed flat), with 5–9 divaricate primary lobes, primary lobes usually 3–7-partite; secondary lobes divaricate, usually entire or occasionally bipartite; ultimate lobes subulate to sublinear, (10–)12–18(–20) mm long, 1.5–2.5 mm wide, rigid, acute, cuspidate with a pungent point 1–2 mm long; margin refracted, usually some undersurface of lamina visible on either side of the midribs of leaf and lobes; upper surface glabrous; lower surface subsericeous to glabrous on either side of the midribs; midribs glabrous or with scattered more or less appressed hairs; texture coriaceous. *Inflorescences* terminal, profuse, conspicuous, erect, pedunculate, simple, many-flowered, secund, acropetal, 30–50 mm long; peduncles 5–10 mm long, tomentose; peduncle and rhachis subvillous with very pale spreading hairs, hairs darker and more appressed below the

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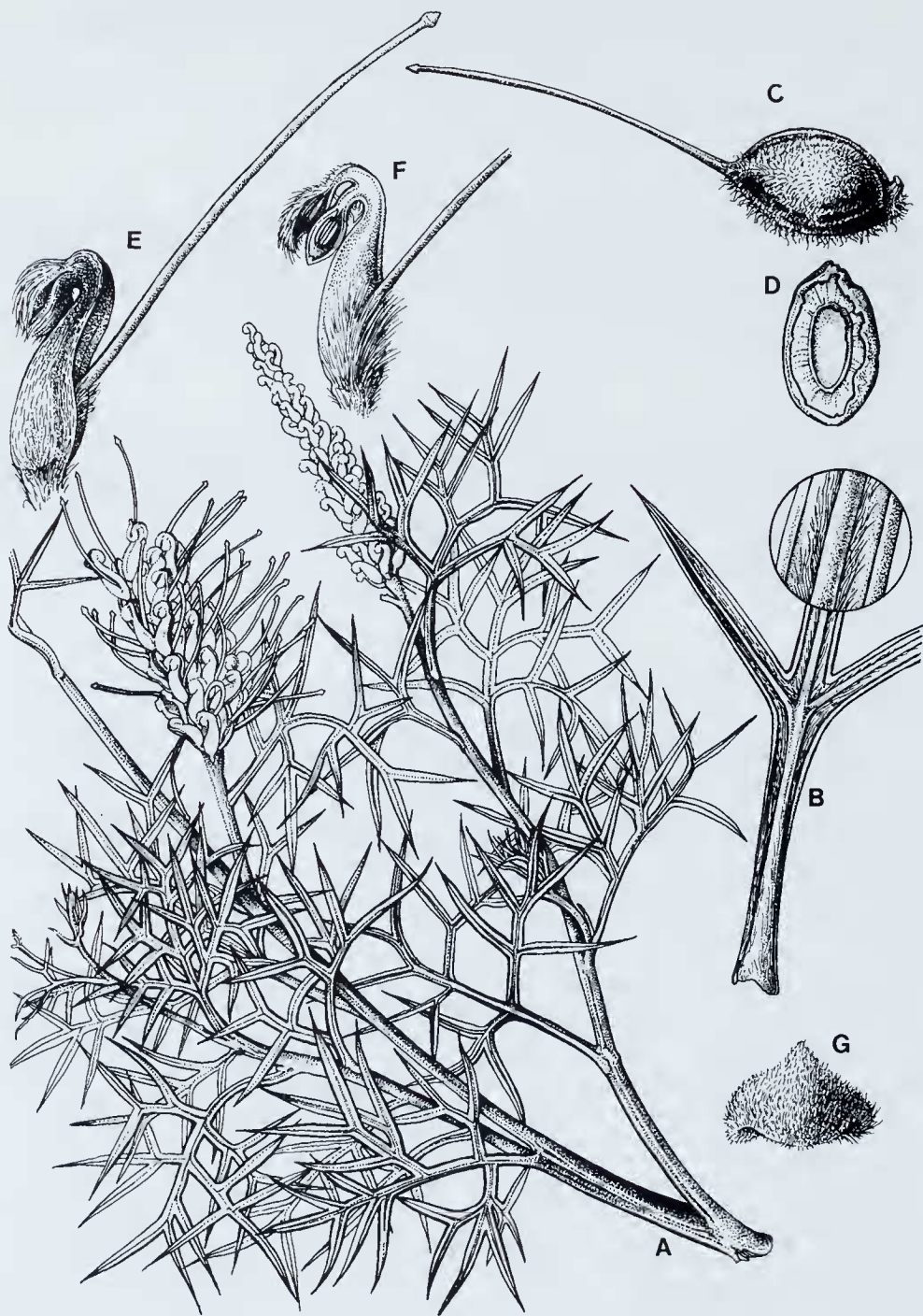


Fig. 1. *Grevillea acanthifolia* ssp. *paludosa*. a — Flowering branch, $\times 0.8$. b — Undersurface of leaf, $\times 2$ and (inset) showing distribution of hairs. c — Mature fruit, $\times 2.5$. d — Inner face of mature seed, $\times 4$. e — Mature flower, $\times 3.5$. f — Section through mature flower, $\times 3.5$. g — Floral bract, $\times 5$. Drawn from holotype, (D.E. Albrecht 3078 and P. Gilmour).

lowermost peduncular bract or bract scar; floral bracts broadly ovate, apiculate, 2–3.5 mm long, 2.5–4.5 mm wide, outer surface tomentose, inner surface glabrous except for few to many ascending hairs along the midline or towards the apex, bracts conspicuous on young inflorescences, usually deciduous when buds are c. 6–10 mm long. *Pedicels* 1.0–1.5 mm long, villous; torus oblique at c. 15°–25° to the transverse, 1.2–1.5 mm from ventral to dorsal side. *Perianth* narrowly and obliquely ovoid below the subapical curve, outer surface subsericeous to tomentose below the curve, villous on the ellipsoid limb, inner surface glabrous; nectary U-shaped, partly enclosed within the torus, pistil 21–24 mm long; stipe 0.5–1.2 mm long, subsericeous; ovary 1.2–1.6 mm long, villous; style glabrous; pollen-presenter a more or less erect cone with a basal rim, \pm ovate or round in plan view, 0.8–1.0 mm long and wide, base oblique at c. 10°–20° to the transverse, cone 0.8–1.0 mm high. *Fruit* a follicle, appressed to the rachis by inward curving of the stipe, obliquely ellipsoid, 8.5–10.5 mm long, c. 6–7.5 mm wide, c. 5–6 mm thick; style persistent; surface villous-velutinous, with a short dense indumentum of stout erect hairs, indumentum with purplish longitudinal stripes and blotches (formed by hairs with dark cell contents), and an emergent loose indumentum of longer pale spreading hairs; pericarp c. 0.3–0.4 mm thick, weakly crustaceous. *Seeds* (Albrecht 3078) obliquely ellipsoid, 6–7 mm long, c. 3.5 mm wide, 1.5–2 mm thick; outer face convex, somewhat rugose; inner face with a peripheral ridge of waxy material, and an inner ridge of harder tissue surrounding a central elliptical area c. 2.5–3.5 mm long and 1–1.5 mm wide; apical elaiosome subtriangular, c. 1 mm long, of waxy material similar to and connecting with the peripheral ridge on the inner face. *Buds* with limb blue-grey, overlain with cream hairs; tepals below the limb cream-green in early bud, becoming blue-grey near (and after) anthesis. *Ovary* covered with white hairs. *Style* (emergent from dorsal side of perianth in late bud) rich puce-pink in bud, paling slightly at and after anthesis. *Style-end* and pollen-presenter green.

DISTRIBUTION AND CONSERVATION STATUS:

G. acanthifolia ssp. *paludosa* is known by only 41 plants in two drainage lines on Nalbaugh Plateau (which extends from Mt Wog Wog to White Rock Mountain), c. 45 km inland from Eden, south-east New South Wales. Nalbaugh Plateau is situated within Nalbaugh National Park, hence all known individuals are secured within a biological reserve. Figure 2 shows the locations of populations seen on the plateau.

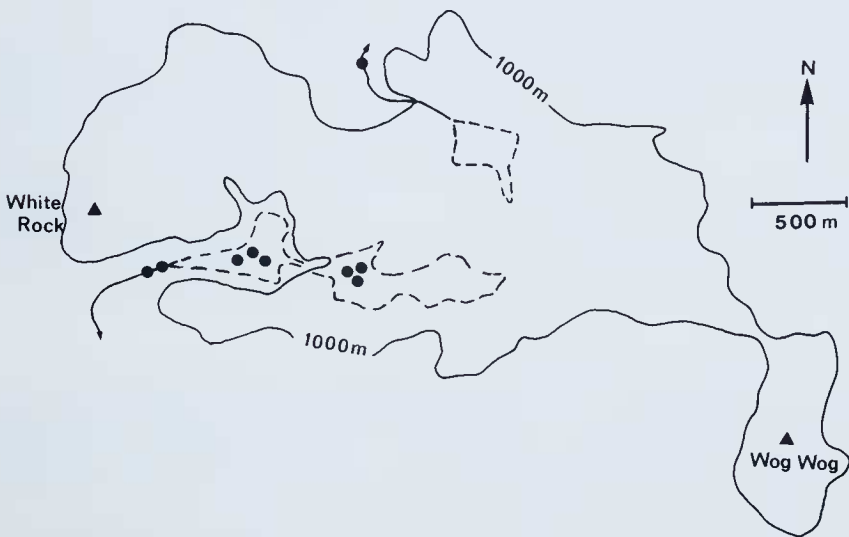


Fig. 2. Occurrences of *G. acanthifolia* ssp. *paludosa* on Nalbaugh Plateau (●); ----- swamp boundaries.

ECOLOGICAL NOTES:

Most plants (34 of the 41 known individuals) were found in a structurally and floristically heterogeneous swamp community in the headwaters of the White Rock River catchment at an elevation of 975–1005 m. The swamp system is underlain by Nalbaugh granite and has a distinctive microtopography consisting of peat and Sphagnum, with flat depressions; occasional shallow pools; emergent better drained and densely vegetated hummocks, and occasional runnels of quartzitic gravel. Depth of the surface layer of peat at one population was 50 cm. Plants of *G. acanthifolia* ssp. *paludosa* appeared to be restricted to the hummocks, which were shared with and surrounded by, *Leptospermum scoparium*, *Gahnia sieberiana*, *Boronia deanei*, *Sprengelia incarnata*, *Gleichenia dicarpa*, *Pultenaea subumbellata* and *Bauera rubioides*. The height of the community ranged from one to three metres and is surrounded by a dense *Leptospermum lanigerum* dominated scrub to c. 10 m high.

Most of the remaining few plants were growing in dense *Leptospermum lanigerum* thickets that fringe the free-flowing creek downstream from the swamps. The substrate in these localities differed in being rocky and gravelly with loam pockets. Two isolated plants were seen in similar streamside vegetation on the separate Wog Wog River catchment; the swamp upstream of this at present lacks any plants despite its close similarities to the White Rock River swamps.

The age structure of populations was relatively uniform. Judging from the stem diameter and size of plants (the smallest seen was 2 m high and c. 1.5 m diameter), most plants appear to be quite old. Although most plants appeared to have set a considerable amount of seed, no seedlings were observed.

Like other closely related taxa, *G. acanthifolia* ssp. *paludosa* is probably fire sensitive and principally regenerates from seed. It may however have the potential to resprout as occasional post fire resprouting from the base of the stem has been observed in populations of *G. acanthifolia* ssp. *acanthifolia* in swamps of the Lithgow area (D. H. Benson, pers. comm.).

The introduced honey bee (*Apis mellifera*) and two species of honeyeater (the White-eared Honeyeater and the New Holland Honeyeater) were seen feeding on the flowers of the *Grevillea*.

KEY TO THE SUBSPECIES OF *G. ACANTHIFOLIA*

1. Ultimate leaf lobes linear or subulate; most of undersurface of leaf enclosed by refracted margin; inflorescences usually ≤ 5 cm long.
 2. Undersurface of leaves and lobes glabrous except for scattered appressed hairs on the midribs; branchlets glabrous or occasionally loosely tomentose; stipe ≥ 1.5 mm long; pollen-presenter oblique, broadly conical; low spreading shrub usually ≤ 1 m high ssp. *stenomera*
 2. Undersurface of some or all leaves and lobes with white appressed hairs on the lamina either side of the midrib; branchlets subsericeous (ridges sometimes glabrous); stipe < 1.5 mm long; pollen-presenter an erect cone; erect spreading shrub attaining 3 m in height ssp. *paludosa*
1. Ultimate leaf lobes cuneate or ovate, rarely linear; most of undersurface of leaf lobes exposed, margin recurved; inflorescences usually > 5 cm long ssp. *acanthifolia*

AFFINITIES

This new subspecies closely resembles in leaf division and lobe shape ssp. *stenomera* from the eastern part of the New England area of New South Wales, but the latter is a less hairy shrub and does not appear to much exceed 1.5 m in height.

The erect, strongly conical pollen-presenter of ssp. *paludosa* is not shared with either ssp. *stenomera* or ssp. *acanthifolia*, which usually have oblique, broadly conical to convex pollen-presenters, although occasional flowers of the latter subspecies have pollen-presenters oblique at as little as c. 10° – 15° (more usually 20° – 30°). The basal rim or 'brim' of the pollen-presenter in ssp. *paludosa* is somewhat oblique (to 20°) but the axis of the cone in relation to the upper few millimetres of the style is quite erect.



Fig. 3. Distribution of *G. acanthifolia* subsp. *paludosa* and some related taxa in New South Wales. *G. acanthifolia* ssp. *acanthifolia* □, *G. acanthifolia* ssp. *stenomera* ◇, *G. acanthifolia* ssp. *paludosa* ■, *G. rivularis* ▼.

Like ssp. *paludosa*, the other two subspecies of *G. acanthifolia* are also usually found in swampy heath communities, although ssp. *stenomera* is occasionally found on drier woodland slopes.

In habit and leaf shape, ssp. *paludosa* is strongly reminiscent of the closely related *G. rivularis* L. Johnson & McGillivray which also grows 'with its feet wet', in the flood zone of a creek near Fitzroy Falls on the N.S.W. Central Tablelands. *G. rivularis* is however an almost glabrous plant.

Figure 3 shows the distribution of ssp. *paludosa* in relation to these closely related taxa. The great geographic separation of these taxa implies a long term separation of the original stock and subsequent divergence to the present taxa. It is interesting to speculate why ssp. *paludosa* occurs where it does and why it is so rare. Although the Nalbaugh peat deposits may not span the last ice age (P. Gell, pers. comm.), analysis of the pollen profiles of cores extracted from the Nalbaugh swamps may provide some additional informative data on fire history of the plateau and relative changes in the abundance of ssp. *paludosa* over the last few thousand years.

FURTHER SPECIMEN SEEN:

New South Wales: Southern Tablelands — Plateau between Mt Wog Wog and White Rock Mountain, 'Long Swamp', catchment of White Rock River, 8.xi.1987, *R.O. Makinson* 322 (bud-fl.) (NSW, BRI, CANB, CBG, MEL, NE).

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